(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau





(43) International Publication Date 23 December 2004 (23.12.2004)

PCT

(10) International Publication Number WO 2004/110676 A1

(51) International Patent Classification⁷: B22D 2/00, 11/18, 37/00, G01N 27/74, 33/20, C21C 5/46

(21) International Application Number:

PCT/EP2004/006108

(22) International Filing Date:

7 June 2004 (07.06.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

03013291.4

13 June 2003 (13.06.2003) EP

(71) Applicant (for all designated States except US): MPC METAL PROCESS CONTROL AB [SE/SE]; Box 287, S-611 26 Nyköping (SE).

(72) Inventors; and

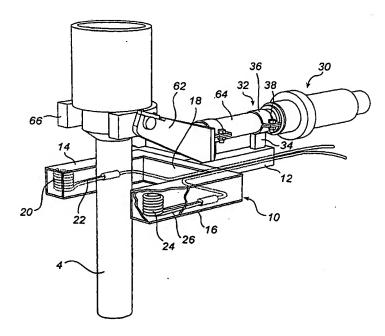
(75) Inventors/Applicants (for US only): JALK, Mats [SE/SE]; V. Kvarngatan 1, S-611 31 Nyköping (SE).

OHLSSON, Willy [SE/SE]; V. Kvarngatan 19, S-611 32 Nyköping (SE). KELVESJÖ, Håkan [SE/SE]; Brunnsgatan 8, S-611 32 Nyköping (SE).

- (74) Agent: AWAPATENT AB; Box 11394, S-404 28 Göteborg (SE).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

[Continued on next page]

(54) Title: A METHOD AND A DEVICE FOR DETECTING SLAG



(57) Abstract: The invention relates to a method and a device of detecting the presence of slag in a shroud (4) through which molten metal passes from a ladle (2) to a tundish (6). A transmitting coil (20) generates an electromagnetic field. An induced voltage generated at a receiving coil (24) is compared with a defined voltage range. If the induced voltage has a value outside the defined voltage range it is indicative of the presence of slag. The coils (20, 24) are arranged in an unmovable manner in relation to the shroud. The invention also relates to a casting plant.



WO 2004/110676 A1



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA,

SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.